

CLAIMS

1. A runflat tire comprising a belt consisting of at least one rubber-coated cord layer laid between a crown portion of a carcass and a tread portion, the carcass consisting of at least one ply toroidally extending over a pair of bead portions in which bead cores are
5 embedded, a pair of sidewall portions extending radially outwardly from the bead portions, and a tread portion extending across the sidewall portions; a reinforcing rubber which has a generally crescent sectional shape and is arranged at the interior surface side at least of sidewall portions; and a ring-shaped rim guard portion protruding
10 outwardly in the tire's width direction arranged at the exterior surface position of the tire immediately above a rim flange in a state where the tire is applied on a standard rim, the tire being characterized in that the rim guard portion is formed by a hard rubber, and
a 100% modulus of the hard rubber is not less than 3.0 MPa and
15 within a range from two to five times as much as that of an outer skin rubber constituting the sidewall portions.

2. A runflat tire comprising a belt consisting of at least one rubber-coated cord layer laid between a crown portion of a carcass and a tread portion, the carcass consisting of at least one ply toroidally
20 extending over a pair of bead portions in which bead cores are embedded, a pair of sidewall portions extending radially outwardly from the bead portions, and a tread portion extending across the sidewall portions; a reinforcing rubber which has a generally crescent sectional shape and is arranged at the interior surface side at least of
25 sidewall portions; and a ring-shaped rim guard portion protruding outwardly in the tire's width direction arranged at the exterior surface position of the tire immediately above a rim flange in a state where the tire is applied on a standard rim, the tire being characterized in that
at least one composite reinforcing layer consisting of a rubber
30 containing reinforcing elements is arranged at a position adjacent to at least a part of a circumferential surface of the rim guard portion.

3. A runflat tire comprising a belt consisting of at least one rubber-coated cord layer laid between a crown portion of a carcass and a tread portion, the carcass consisting of at least one ply toroidally extending over a pair of bead portions in which bead cores are embedded, a pair of sidewall portions extending radially outwardly from the bead portions, and a tread portion extending across the sidewall portions; a reinforcing rubber which has a generally crescent sectional shape and is arranged at the interior surface side at least of sidewall portions; and a ring-shaped rim guard portion protruding outwardly in the tire's width direction arranged at the exterior surface position of the tire immediately above a rim flange in a state where the tire is applied on a standard rim, the tire being characterized in that

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at least a part of the rim guard portion is formed by a hard rubber, a 100% modulus of the hard rubber is not less than 3.0 MPa and

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within a range from two to five times as much as that of a outer skin rubber constituting the sidewall portions, and

at least one composite reinforcing layer consisting of a rubber containing reinforcing elements is arranged within the rim guard portion or at a position adjacent to at least a part of a circumferential surface of the rim guard portion.

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4. The runflat tire according to claim 3, wherein the rim guard portion has an inner rubber section located in the inner side in the tire's width direction and consisting of a hard rubber, and an outer rubber section located in the outer side in the tire's width direction and consisting of a soft rubber.

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5. The runflat tire according to claim 4, wherein the hard rubber constituting the inner rubber section has a 100% modulus of not less than 3.0 MPa, and the soft rubber constituting the outer rubber section has a 100% modulus of less than 3.0 MPa.

6. The runflat tire according to claim 4 or 5, wherein the volume percent of the inner rubber section with respect to the entire rim guard portion is not less than 40%.

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7. The runflat tire according to claim 4, 5 or 6, wherein the inner rubber section is formed by extending a rubber chafer to the radially outward direction, and the outer rubber section is formed by extending the outer skin rubber constituting the sidewall portion to the radially inward direction.

8. The runflat tire according to any one of claims 4-7, wherein the composite reinforcing layer is placed between the inner and outer rubber sections.

9. The runflat tire according to any one of claims 2-8, wherein the reinforcing elements constituting the composite reinforcing layer are nonwoven fabrics.

10. The runflat tire according to any one of claims 2-9, wherein the reinforcing elements constituting the composite reinforcing layer are filament fibers having a fiber diameter of 0.01-1 mm and a fiber length of not less than 1 mm.

11. The runflat tire according to any one of claims 2-10, wherein the composite reinforcing layer is so disposed that it wraps around the outer circumferential surface of the rim guard portion.

12. The runflat tire according to any one of claims 1-11, wherein a pair of narrow reinforcing belts in which cords extends in parallel to the tire's circumferential direction are provided at positions each covering an end of the belt, and that a distance measured from a tread width end position to the inner end position of the narrow reinforcing belt along the tire's width direction is not less than 1/4 of the tread width.

13. The runflat tire according to claim 12, wherein a plurality of circumferential main groove extending along the tire's circumferential direction are provided on the tread portion, and the narrow reinforcing belt is preferably so disposed that its inner end in the tire's width direction is laid inside from the width center line of the outermost circumferential main groove in the tire's width direction.

14. The runflat tire according to any one of claims 1-13, wherein the tire is mounted on a regulated rim and is inflated by a given air

pressure, and, in a cross section of the tire/wheel assembly taken along the tire's width direction under an unloaded condition,

said rim guard portion is provided within a specific area on the exterior surface of the tire, the area extending from the tire's maximum width position on the exterior surface to the highest position of the exterior surface which contacts the exterior surface of the rim flange,

an arc is drawn to circumscribe both the tire's maximum width position and the exterior surface of the rim flange and the arc is assumed as a reference arc approximating the contour of the exterior surface of the specific area (excluding the rim guard portion),

a ratio of the minimum value to the maximum value of the thickness of the tire, which are measured on a plurality of normal lines perpendicular to the reference arc within the specific area, preferably range from 0.8 to 1.0, and

the maximum height of the rim guard portion, which is the distance between the reference arc and the top face of the rim guard portion measured on the normal lines drawn from the reference arc, is 0.52-1.40 times as much as the tire thickness measured on the same normal line as the maximum height.

15. The runflat tire according to claim 14, wherein the maximum height of the rim guard portion is 0.58-1.20 times as much as the tire thickness measured on the same normal line.

16. The runflat tire according to claim 14 or 15, wherein the average height of the rim guard portion, which is obtained by dividing the sectional area of the rim guard portion in the cross section taken along the tire's width direction by the length of the bottom of the rim guard portion on the reference arc, is not less than 0.6 times and less than 1.0 time as much as the maximum height of the rim guard portion.

17. The runflat tire according to claim 14, 15 or 16, wherein the rim guard portion has a generally trapezoidal sectional shape.

18. The runflat tire according to claim 17, wherein a top plane of the rim guard portion forms a flat surface.

19. The runflat tire according to claim 18, the length of the top plane of the rim guard portion in the cross section taken along the tire's width direction is 0.14- 0.90 times as much as said bottom lines.

20. The runflat tire according to claim 14, 15 or 16, wherein the rim guard portion has a generally triangle sectional shape.

21. The runflat tire according to any one of claims 1-20, wherein a boundary portion between the exterior surface of the tire and the exterior circumferential surface of the rim guard portion forms a smooth curve.

22. The runflat tire according to any one of claims 1-21, wherein the reinforcing rubber has a 100% modulus of not less than 4 MPa.

23. The runflat tire according to any one of claims 1-22, wherein at least one ply of the plies constituting the carcass includes an organic fiber cord selected from the group consisting of 6-nylon, 66-nylon, polyethylene terephthalate, rayon, polyethylene naphthalate and aramid.